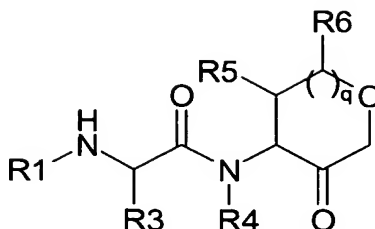


**Claims**

1. A compound of the formula (IV):

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where:

R1 = R'C(O) , R' SO2 ,

- 10 R' = a bicyclic, saturated or unsaturated, 8-12 membered ring system containing 0-4 hetero atoms selected from S, O and N, which is optionally substituted with up to four substituents independently selected from groups a), b) and c) below;

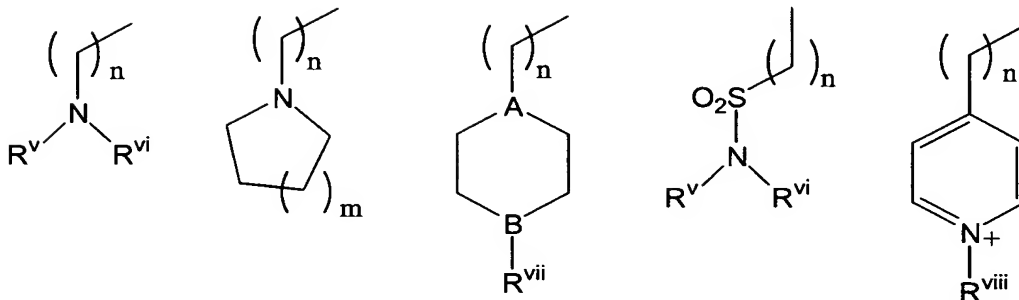
- 15 a) a cyclic group which may be linked direct to the R' ring or via an alkyl, alkylether, alkylthioether, alkylamine, alkylamide, alkylsulphonamide, alkylsulphone, alkylurea, alkylketone or alkylester linker; or
- b) H, C1-7alkyl, C3-6cycloalkyl, OH, SH, NH<sub>2</sub> , NHC1-3alkyl, N(C1-3alkyl)<sub>2</sub>, halogen; or
- 20 c) O-C1-4alkyl, S-C1-4alkyl, SOC1-4alkyl, SO<sub>2</sub>C1-4alkyl, CO<sub>2</sub>C0-4alkyl, NHCOC0-4alkyl, CONHC0-4alkyl, COC0-C4alkyl, NHC(=NH)NH<sub>2</sub>;

R4 = H, C1-7-alkyl, Ar-C1-7-alkyl, Ar, C3-7-cycloalkyl; C2-7alkenyl,;

- 25 R3 = C1-7-alkyl, C2-C7 alkenyl, C3-7-cycloalkyl, Ar-C1-7-alkyl, Ar;

R5 = C1-7-alkyl, halogen, Ar-C1-7-alkyl, C0-3-alkyl-CONR<sup>3</sup>R<sup>4</sup> or R<sup>iv</sup>;

R<sup>iv</sup> =



where  $n = 1-3$ ,  $m = 1-3$ ;

$R^v$ ,  $R^{vi} = H$ , C1-7-alkyl;

$A = N$ ,  $CH$ ;  $B = N$ ,  $O$ ,  $S$ ,  $CH$ ;

5  $R^{vii} = \text{absent when } B = O, S; \text{ or } R^{vii} = H, \text{ C1-7-alkyl when } B = N, CH$ ;

$R^{viii} = O$ , C1-7-alkyl;

H, C1-7-alkyl, Ar-C1-7-alkyl, C1-3-alkyl-SO<sub>2</sub>-R<sup>ix</sup>, C1-3-alkyl-C(O)-NHR<sup>ix</sup> or  
CH<sub>2</sub>XAr,

R<sup>ix</sup> is C1-7-alkyl. ArC1-7-alkyl or C3-C6-cycloalkyl;

10 q is 0 or 1

and pharmaceutically acceptable salts thereof.

2. A compound according to claim 1, wherein R<sub>4</sub> and/or R<sub>6</sub> is hydrogen.

15 3. A compound according to claim 1 wherein the R' bicyclic ring is selected from naphthyl, quinolyl, benzofuranyl, benzothienyl, indolyl, indolinyl.

4. A compound according to claim 3, wherein the linkage is the 2 position of the R' ring.

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5. A compound according to claim 1 wherein R' is substituted with morpholine or N-methylpiperidine linked through an alkyl or alkylether linkage.

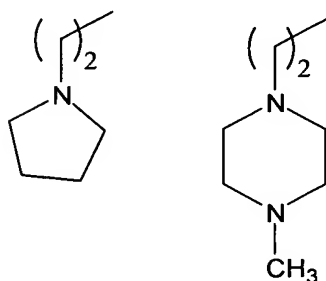
6. A compound according to claim 1, wherein R<sub>1</sub> is R'C(O).

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7. A compound according to claim 1, wherein R<sub>3</sub> is 2-methylprop-1-enyl, benzyl or especially i-butyl.

8. A compound according to claim 1, wherein the stereochemistry at R3 corresponds to a natural or non natural L-amino acid.

9. A compound according to claim 1, wherein R5 is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, CH<sub>2</sub>Ar,  
5 CH<sub>2</sub>CONH<sub>2</sub>, (CH<sub>2</sub>)<sub>2</sub>CONH<sub>2</sub>, CH<sub>2</sub>OH



10. A compound according to claim 9, wherein R5 is CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub>, or  
10 CH<sub>2</sub>OH..

11. A compound according to claim 1, wherein R5 and the C4 bond both have (R) stereochemistry.

12. A compound according to claim 1, wherein R5 and the C4 bond both have (S) stereochemistry.

13 A compound according to claim 1 wherein q is 1.

14. A compound according to claim 1, wherein q is 0.

15. A method for the treatment of disorders dependent upon the activity of cathepsin K comprising the administration of a compound as defined in claim 1 to a mammal in need thereof.

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16. A method according to claim 15 wherein the disorder is a bone disorder such as periodontitis or osteoarthritis

17. A method according to claim 15 wherein the disorder is a cartilage or matrix degradation disorder such as osteoarthritis or rheumatoid arthritis.

18. A method according to claim 15 wherein the disorder is a neoplasia.

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19. A method for the treatment of a parasite infection comprising the administration of a compound as defined in claim 1 to a mammal in need thereof.

10 20. A method for the control of parasites comprising the administration of a compound as defined in claim 1 to an invertebrate vector and/or to a locus prone to infestation of such a vector.

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